

Ch 5 - The Periodic Table

Ch 5 - The Periodic Table

↳ Dmitri Mendeleev

↳ Published 1st Per table in 1869

Ch 5 - The Periodic Table

↳ Dmitri Mendeleev

↳ Published 1st Per table in 1869

↳ Arranged elements by increasing Atomic Mass
↳ grouped elements w/ similar prop

Ch 5 - The Periodic Table

↳ Dmitri Mendeleev

↳ Published 1st Per table in 1869

↳ Arranged elements by increasing Atomic Mass
↳ grouped elements w/ similar prop

Ch 5 - The Periodic Table

↳ Dmitri Mendeleev

↳ Published 1st Per table in 1869

↳ Arranged elements by increasing Atomic Mass
↳ grouped elements w/ similar props

Periodicity - elements w/ similar props Recurred
@ Regular intervals w/in the table

2 Big Q's



2 Big Q's

why couldn't some elements be assigned
by mass?



2 Big Q's

why couldn't some elements be assigned
by mass?

12^3I 12^8Te ?



2 Big Q's

why couldn't some elements be arranged
by mass?

127I 128Te ?

Why Periodicity?



Moseley (1911)

↳ arranged by increasing nuclear charge
; grouping them by props.

Moseley (1911)

↳ arranged by increasing nuclear charge (Atomic #)
; grouping them by props.

Answered I, Te question →

Moseley (1911)

↳ arranged by increasing nuclear charge (Atomic #)
; grouping them by props.

Answered I, Te question → $^{127}_{52}\text{I}$ came after $^{128}_{52}\text{Te}$ b/c of nuclear charge.

Moseley (1911)

↳ arranged by increasing nuclear charge (Atomic #)
; grouping them by props.

Answered I, Te question → $^{127}_{52}\text{I}$ came after $^{128}_{52}\text{Te}$ b/c of nuclear charge.

Periodic Law -

Moseley (1911)

↳ arranged by increasing nuclear charge (Atomic #)
; grouping them by props.

Answered I, Te question → $^{127}_{52}\text{I}$ came after $^{128}_{52}\text{Te}$ b/c of nuclear charge.

Periodic Law - phys + chem props of elements are periodic
functions of atomic #;

Moseley (1911)

↳ arranged by increasing nuclear charge (Atomic #)
; grouping them by props.

Answered I, Te question → $^{127}_{52}\text{I}$ came after $^{128}_{52}\text{Te}$ b/c of nuclear charge.

occurs b/c
outer shell →
e⁻ config Repeat
Regular intervals

→ Periodic Law - phys + chem props of elements are periodic
functions of atomic #;

Ch 5 Notes D AF.ink

gcl

Ch 5 Notes D AF.ink

gr 1 alkali metals

gr 1 alkali metals (ns¹)

gr 1 alkali metals (ns¹)
soft, silvery, highly Reactive Metals

gr 1 alkali metals (ns¹)
soft, silvery, highly Reactive Metals
Not found freely in Nature

gr 1 alkali metals (ns¹)

soft, silvery, highly Reactive Metals

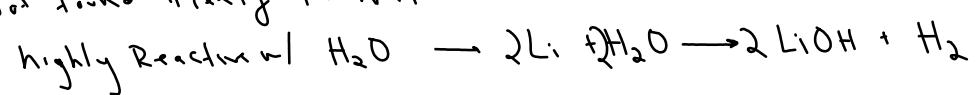
Not found freely in Nature

highly Reactive w/ H₂O

gr 1 alkali metals (ns¹)

soft, silvery, highly Reactive Metals

Not found freely in Nature



gr 1 alkali metals (ns¹)

soft, silvery, highly Reactive Metals

Not found freely in Nature

highly Reactive w/ H₂O - $2\text{Li} + 2\text{H}_2\text{O} \rightarrow 2\text{LiOH} + \text{H}_2$

↳ Reactivity increases ↓ group

gr 1 alkali metals (ns¹)

soft, silvery, highly Reactive Metals

Not found freely in Nature

highly Reactive w/ H₂O - $2\text{Li} + 2\text{H}_2\text{O} \rightarrow 2\text{LiOH} + \text{H}_2$

↳ Reactivity increases ↓ group

gr 1 alkali metals (ns¹)

soft, silvery, highly Reactive Metals

Not found freely in Nature

highly Reactive w/ H₂O - $2\text{Li} + 2\text{H}_2\text{O} \rightarrow 2\text{LiOH} + \text{H}_2$

↳ Reactivity increases ↓ group, b/c outer e⁻ are farther away from nucleus and experience less attraction. So less E is Req'd to Remove the e⁻.

gr 1 alkali metals (ns¹)

soft, silvery, highly Reactive Metals

Not found freely in Nature

highly Reactive w/ H₂O - $2\text{Li} + 2\text{H}_2\text{O} \rightarrow 2\text{LiOH} + \text{H}_2$

↳ Reactivity increases ↓ group, b/c outer e⁻ are farther away from nucleus and experience less attraction. So less E is Req'd to Remove them.

low MP, MP ↓ down group.

Gr 2 Alkaline earth Metals

Gr 2 Alkaline earth Metals (ns^2)

Gr 2 Alkaline earth Metals (ns^2)
↳ Reactive metals, not freely in nature

Gr 2 Alkaline earth Metals (ns^2)

↳ Reactive metals, not freely in nature

↳ less Reactive, harder, denser than Gr 1

Gr 2 Alkaline earth Metals (ns^2)

↳ Reactive metals, not freely in nature

↳ less Reactive, harder, denser than Gr 1

↳ full s orbital makes these metals
a little more stable

Gr 2 Alkaline earth Metals (ns^2)

↳ Reactive metals, not freely in nature

↳ less Reactive, harder, denser than Gr 1

↳ full s orbital makes these metals
a little more stable

Gr 3-12 Transition Metals

Gr 2 Alkaline earth Metals (ns^2)

↳ Reactive metals, not freely in nature

↳ less Reactive, harder, denser than Gr 1

↳ full s orbital makes these metals
a little more stable

Gr 3-12 Transition Metals ($(n-1)d^x ns^2$)

Gr 2 Alkaline earth Metals (ns^2)

↳ Reactive metals, not freely in nature

↳ less Reactive, harder, denser than Gr 1

↳ full s orbital makes these metals a little more stable

Gr 3-12 Transition Metals ($(n-1)d^x ns^2$)

↳ have various props of metals

p-block

p-block ($ns^2 n\ell^1$)

p-block ($ns^2 n\pi^{\uparrow}$)

Gr 17 halogens

p-block ($ns^2 n p^{\uparrow}$)

Gr 17 halogens

p-block ($ns^2 np^{\uparrow}$)

Gr 17 Halogens - highly Reactive nonmetals
only need 1 more e^- to get
a stable e^- config

p-block ($ns^2 np^{\uparrow}$)

Gr 17 Halogens - highly Reactive nonmetals
only need 1 more e^- to get
a stable e^- config
all diatomic @ Room T

p-block ($ns^2 np^{\uparrow}$)

Gr 17 Halogens - highly Reactive nonmetals
only need 1 more e^- to get
a stable e^- config
all diatomic @ Room T
React Readily w/ Gr 1 metals:

p-block ($ns^2 np^{\uparrow}$)

Gr 17 Halogens - highly Reactive nonmetals
only need 1 more e^- to get
a stable e^- config

all diatomic @ Room T
React Readily w/ Gr 1 metals: $2Na + Cl_2 \rightarrow 2NaCl$

p-block ($ns^2 np^{\uparrow}$)

Gr 17 Halogens - highly Reactive nonmetals
only need 1 more e^- to get
a stable e^- config

all diamagnetic @ Room T
React Readily w/ Gr 1 Metals: $2Na + Cl_2 \rightarrow 2NaCl$

Gr 18 Noble Gases

Ch 5 Notes D AF.ink

p-block ($ns^2 np^{\uparrow}$)

Gr 17 Halogens - highly Reactive nonmetals
only need 1 more e^- to get
a stable e^- config

all diamagnetic @ Room T
React Readily w/ Gr 1 metals: $2Na + Cl_2 \rightarrow 2NaCl$

Gr 18 Noble Gases - colorless, odorless, inert gases

p-block ($ns^2 np^{\uparrow}$)

Gr 17 Halogens - highly Reactive nonmetals
only need 1 more e^- to get
a stable e^- config

all diamagnetic @ Room T
React Readily w/ Gr 1 metals: $2Na + Cl_2 \rightarrow 2NaCl$

Gr 18 Noble Gases - colorless, odorless, inert gases
Some of the last elements discovered

Ch 5 Notes D AF.ink

p-block ($ns^2 np^{\uparrow}$)

Gr 17 Halogens - highly Reactive nonmetals
only need 1 more e^- to get
a stable e^- config

all diatomic @ Room T
React Readily w/ Gr 1 metals: $2Na + Cl_2 \rightarrow 2NaCl$

Gr 18 Noble Gases - colorless, odorless, inert gases } b/c full outer shell
Some of the last elements discovered

Ch 5 Notes D AF.ink

Lanthanides

Actinides

Ch 5 Notes D AF.ink

Lanthanides

Actinides

Ch 5 Notes D AF.ink

Lanthanides

↳ Really Reactive silvery Metals

Actinides

Ch 5 Notes D AF.ink

Lanthanides

↳ Really Reactive silvery Metals
(Rare earth elements)

Actinides

Ch 5 Notes D AF.ink

Lanthanides

↳ Really Reactive silvery Metals
(Rare earth elements)

Actinides

Lanthanides

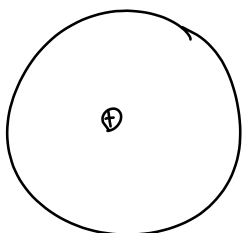
↳ Really Reactive silvery Metals
(Rare earth elements)

Actinides

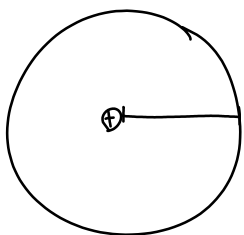
↳ a lot man-made
All Radioactive

Atomic Radius

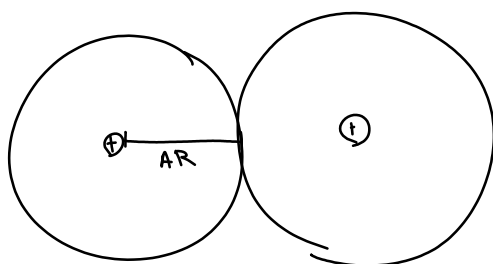
Atomic Radius



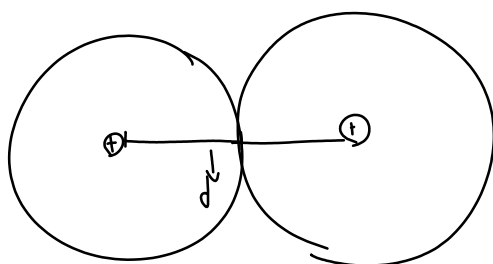
Atomic Radius



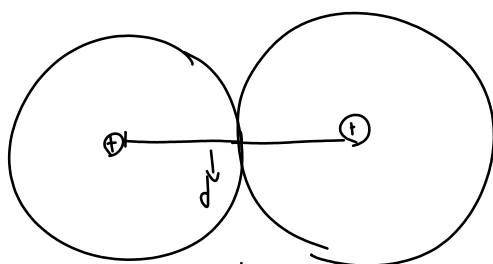
Atomic Radius (AR)



Atomic Radius (AR)

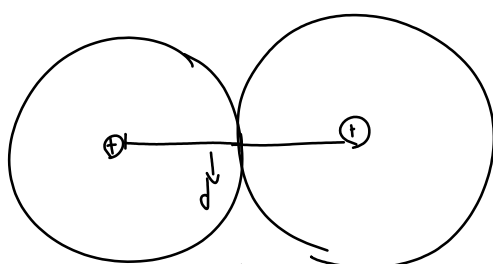


Atomic Radius (AR)



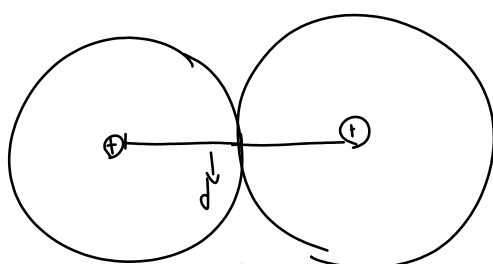
$$AR = \frac{d}{2}$$

Atomic Radius (AR)



$$AR = \frac{d}{2} \left(\frac{1}{2} \text{ the dist b/w nuclei of adjacent atoms} \right)$$

Atomic Radius (AR)

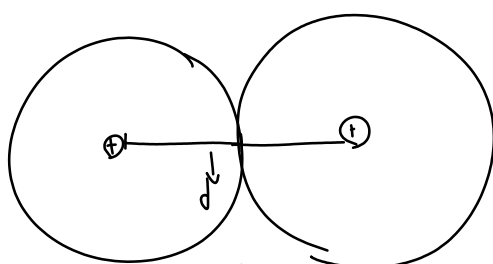


$$AR = \frac{d}{2} \left(\frac{1}{2} \text{ the dist b/w nuclei of adjacent atoms} \right)$$

Trends in AR

Across a Period, AR ↓ why? B/c

Atomic Radius (AR)

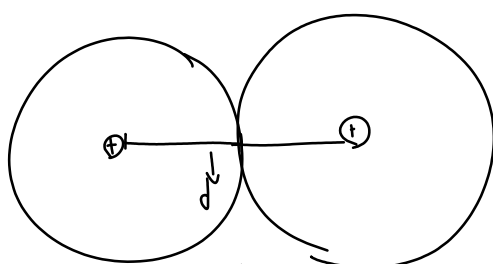


$$AR = \frac{d}{2} \left(\frac{1}{2} \text{ the dist b/w nuclei of adjacent atoms} \right)$$

Trends in AR

Across a Period, AR ↓ why? B/c nuclear charge is increasing which more strongly attracts e^- , bringing them closer to the nucleus.

Atomic Radius (AR)



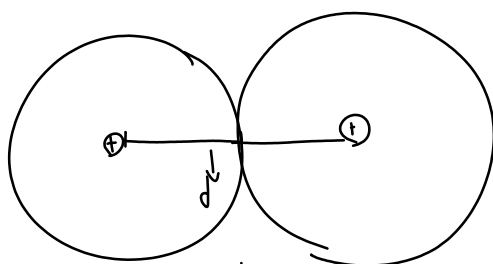
$$AR = \frac{d}{2} \left(\frac{1}{2} \text{ the dist b/w nuclei of adjacent atoms} \right)$$

Trends in AR

Across a Period, AR ↓ why? B/c nuclear charge is increasing which more strongly attracts e^- , bringing them closer to the nucleus.

Down a Group, AR ↑

Atomic Radius (AR)



$$AR = \frac{d}{2} \left(\frac{1}{2} \text{ the dist b/w nuclei of adjacent atoms} \right)$$

Trends in AR

Across a Period, AR ↓ why? B/c

nuclear charge is increasing which more strongly attracts e^- , bringing them closer to the nucleus.

Down a Group, AR ↑ B/c ↓ a Group more E-levels are added to the atom which are farther away from the nucleus so the AR ↑

Trends in AR

Across a Period, AR \downarrow why? B/c

nuclear charge is increasing which more strongly attracts e^- , bringing them closer to the nucleus.

Down a Group, AR \uparrow B/c \downarrow a Group
more E -levels are added to the atom
which are farther away from the nucleus
so the AR \uparrow

exceptions

@ end of d-Block AR \uparrow

Trends in AR

Across a Period, AR \downarrow why? B/C

nuclear charge is increasing which more strongly attracts e^- , bringing them closer to the nucleus.

Down a Group, AR \uparrow B/C \downarrow a Group
more F-levels are added to the atom
which are farther away from the nucleus
so the AR \uparrow

exceptions

@ end of d-Block AR \uparrow

3d) ~~4s~~

Trends in AR

Across a Period, AR \downarrow why? B/C

nuclear charge is increasing which more strongly attracts e^- , bringing them closer to the nucleus.

Down a Group, AR \uparrow B/C \downarrow a Group
more F-levels are added to the atom
which are farther away from the nucleus
so the AR \uparrow

exceptions

@ end of d-Block AR \uparrow

0 3d) ~~4s~~

Trends in AR

Across a Period, AR \downarrow why? B/C

nuclear charge is increasing which more strongly attracts e^- , bringing them closer to the nucleus.

Down a Group, AR \uparrow B/C \downarrow a Group
more F-levels are added to the atom
which are farther away from the nucleus
so the AR \uparrow

exceptions

@ end of d-Block AR \uparrow

0 3d) ~~4s~~

Trends in AR

Across a Period, AR \downarrow why? B/C

nuclear charge is increasing which more strongly attracts e^- , bringing them closer to the nucleus.

Down a Group, AR \uparrow B/C \downarrow a Group
more F-levels are added to the atom
which are farther away from the nucleus
so the AR \uparrow

exceptions

@ end of d-Block AR \uparrow

3d) \nearrow s p end of d-Block
the full d orbitals
 e^- shield the nuclear
charge from the outer s e^- .

Trends in AR

Across a Period, AR \downarrow why? B/C

nuclear charge is increasing which
more strongly attracts e^- , bringing them
closer to the nucleus.

Down a Group, AR \uparrow B/C \downarrow a Group
more F-levels are added to the atom
which are farther away from the nucleus
so the AR \uparrow

exceptions

@ end of d-Block AR \uparrow

3d) \nearrow s p end of d-Block
the full d orbitals
 e^- shield the nuclear
charge from the outer s e^- . Now
the s e^- are less attracted, and move
further away (AR \uparrow)

Trends in AR

Across a Period, AR \downarrow why? B/C

nuclear charge is increasing which
more strongly attracts e^- , bringing them
closer to the nucleus.

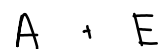
Down a Group, AR \uparrow B/C \downarrow a Group
more F-levels are added to the atom
which are farther away from the nucleus
so the AR \uparrow

Ionization E

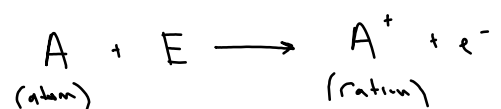
Ionization E - E req'd to Remove an e^-
from an atom

Ionization E - E req'd to Remove an e^-
(cation formation) from an atom

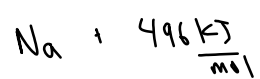
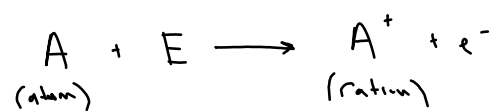
Ionization E - E req'd to Remove an e^-
(cation formation) from an atom



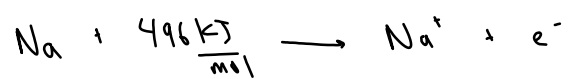
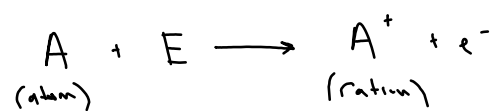
Ionization E - E req'd to Remove an e^-
(cation formation) from an atom



Ionization E - E req'd to Remove an e^-
(cation formation) from an atom



Ionization E - E req'd to Remove an e^-
(cation formation) from an atom



IE

IE Across a Per, IE ↑. why?

IE Across a Per, IE \uparrow . why? B/c across the per
nuclear charge \uparrow which attracts the e^- more strongly
Req more E to Remove the e^-

IE Across a Per, IE \uparrow . why? B/c across the per
nuclear charge \uparrow which attracts the e^- more strongly
Req more E to Remove the e^-

Down a group, IE \downarrow why?

IE Across a Per, IE \uparrow . why? B/c across the per
nuclear charge \uparrow which attracts the e^- more strongly
Req more E to Remove the e^-

Down a group, IE \downarrow why? B/c down a group
more E-levels are added to the atom so the val e^- are
farther away from the nuclear charge

IE Across a Per, IE \uparrow . why? B/c across the per
nuclear charge \uparrow which attracts the e^- more strongly
Req more E to Remove the e^-

Down a group, IE \downarrow why? B/c down a group
more E-levels are added to the atom so the val e^- are
farther away from the nuclear charge. Now they experience
less attraction and more easily Removed from the atom

IE Across a Per, IE \uparrow . why? B/c across the per
nuclear charge \uparrow which attracts the e^- more strongly
Req more E to Remove the e^-

Down a group, IE \downarrow why? B/c down a group
more E-levels are added to the atom so the val e^- are
farther away from the nuclear charge. Now they experience
less attraction and more easily Removed from the atom
also inner shell e^- shield the val e^- from the nuclear
charge so they experience less attraction, and less E needed
to Remove them.

exceptions

exceptions

S → p IF ↓

exceptions

S \rightarrow p I E \downarrow B/c fills orbital shield the p
e⁻ from the nuclear charge, Req less E to Remove
the 1st p e⁻

exceptions

$s \rightarrow p$ IE \downarrow B/c fills orbital shield the p
e⁻ from the nuclear charge, Req less E to Remove
the 1st p e⁻

$d \rightarrow p$ IE \downarrow

exceptions

$S \rightarrow p$ IE \downarrow B/c full s orbital shield the p
e⁻ from the nuclear charge, Req less E to Remove
the 1st p e⁻

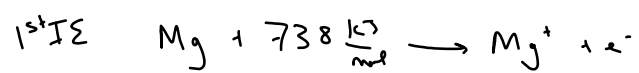
$d \rightarrow p$ IE \downarrow b/c full d-orbital shielding the
nuclear charge...

exceptions

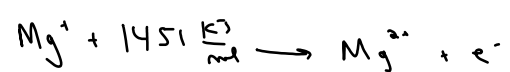
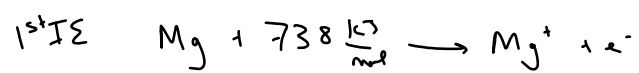
$s \rightarrow p$ IE \downarrow B/c full s orbital shield the p
e⁻ from the nuclear charge, Req less E to Remove
the 1st p e⁻

$d \rightarrow p$ IE \downarrow b/c full d-orbital shielding the
nuclear charge...

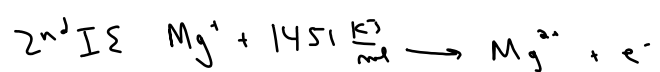
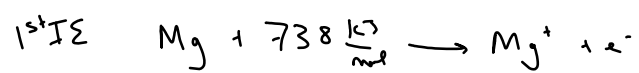
Successive IE



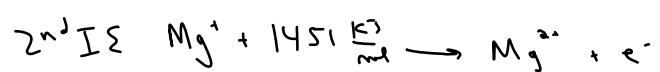
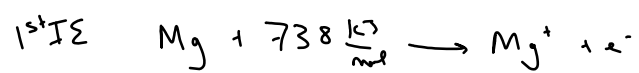
Successive IE



Successive IE

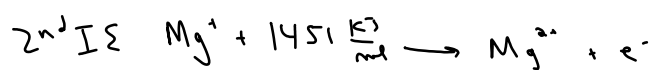
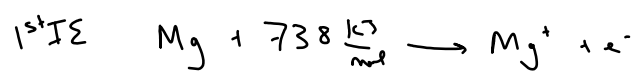


Successive IE



$$\text{IE}_1 < \text{IE}_2$$

Successive IE



Big jump in IE when core e^- are removed.

B/c inner shell e^- are closer to nucleus and in a stable config so a lot more E is needed to remove them.

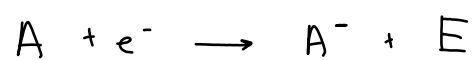
$$\text{IE}_1 < \text{IE}_2$$

Successive IE ↓ b/c nuclear charge has a stronger hold on the remaining e^- , so increases E is req'd to remove a 2nd e^- .

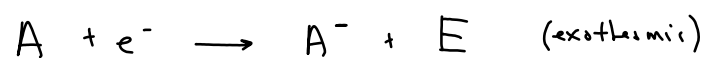
e- Affinity

e- Affinity Exchange w/ taking on an e^-

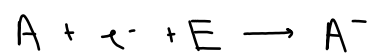
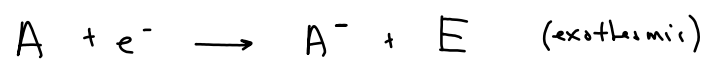
e- Affinity - Exchange w/ taking on an e-



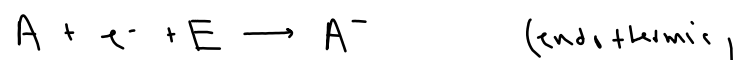
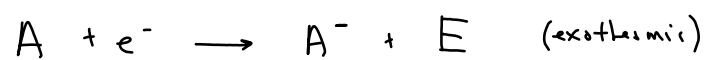
e- Affinity - Exchange w/ taking on an e⁻



e⁻ Affinity - Exchange w/ taking on an e⁻



e- Affinity - Exchange w/ taking on an e-



Ch 5 Notes D AF.ink

exothermic - E released

exothermic - E released $\rightarrow (-) e^- A$
endothermic

exothermic - E released $\rightarrow (-) e^- A$
endothermic E absorbed $\rightarrow (+) e^- A$

exothermic - E released $\rightarrow (-) e^- A$

endothermic E absorbed $\rightarrow (+) e^- A$

trans - ΔG° high $\rightarrow (-) e^- A$ (v. exothermic)
↳

exothermic - E released $\rightarrow (-) e^- A$

endothermic E absorbed $\rightarrow (+) e^- A$

trans - Δ_{eff} high $\leftarrow e^- A$ (v. exothermic)

\hookrightarrow only need 1 more e^- to fill outer shell
making it stable

exothermic - E released $\rightarrow (-) e^- A$

endothermic E absorbed $\rightarrow (+) e^- A$

trans - Δ_{eff} high $\rightarrow e^- A$ (v. exothermic)

\hookrightarrow only need 1 more e^- to fill outer shell
making it stable

Δ_{eff} low $\rightarrow e^- A$

exothermic - E released $\rightarrow (-) e^- A$

endothermic E absorbed $\rightarrow (+) e^- A$

trans - Δ_{eff} high $\rightarrow e^- A$ (v. exothermic)

\hookrightarrow only need 1 more e^- to fill outer shell
making it stable

Δ_{eff} low $\rightarrow e^- A \rightarrow$

exothermic - E released $\rightarrow (-) e^- A$

endothermic E absorbed $\rightarrow (+) e^- A$

trans - $\Delta_r H^\circ$ high $\rightarrow e^- A$ (v. exothermic)

\hookrightarrow only need 1 more e^- to fill outer shell
making it stable

$\Delta_r H^\circ$ low $\rightarrow e^- A \rightarrow$ 1 more e^- fills the s-orbital
making them a little more stable

$$\underline{e^- A} \quad \text{for } 18 \rightarrow 1_{\text{w}} + e^- A$$

e⁻ A Gr 18 → lw + e⁻ A b/c new e⁻ added to a new
E-level so it's farther away from the other
e⁻ and experiences less Repulsion. So less
E is Req'd to add it.

e^-A Gr 18 \rightarrow $lw + e^-A$ b/c new e^- added to a new
E-level so it's farther away from the other
 e^- and experiences less Repulsion. So less
E is Req'd to add it.

Gr 2 $hgh + e^-A$

$e^- A$ Gr 18 \rightarrow low $+ e^- A$ b/c new e^- added to a new
E-level so it's farther away from the other
 e^- and experiences less Repulsion. So less
E is Req'd to add it.

Gr 2 high $+ e^- A$ b/c new e^- is added to the same E-level
as the other val e^- . So it experiences more Repulsion
and more E is Req'd for the atom to take it on.

Ionie Radii

Ionic Radii
Cation smaller than atom
↳

Ionic Radii

Cation smaller than atom

↳ B/c w/ less e^- the nuclear charge has a stronger attraction for the remaining e^- bringing them closer to nuc.

Ionic Radii

Cation smaller than atom

↳ B/c w/ less e^- the nuclear charge has a stronger attraction for the remaining e^- bringing them closer to nuc.

anions are larger than atoms

Ionic Radii

Cation smaller than atom

↳ B/c w/ less e^- the nuclear charge has a stronger attraction for the remaining e^- bringing them closer to nuc.

anions are larger than atoms

↳ B/c more e^- Repel each other more and experience less attraction so they move farther apart.

electronegativity

electronegativity (e-neg) - ability for an atom to attract e⁻
in a chemical bond

electronegativity (e-neg) - ability for an atom to attract e⁻
in a chemical bond

↳ scale 0.0 - 4.0

electronegativity (e-neg) - ability for an atom to attract e⁻
in a chemical bond

↳ scale 0.0 - 4.0

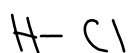
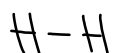
↑ Fluorine

electronegativity (e-neg) - ability for an atom to attract e^- in a chemical bond

↳ scale 0.0 - 4.0
↑ Fluorine
difference in e-neg b/w elements indicates how e^- are shared in bonds

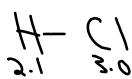
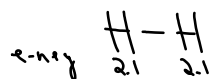
electronegativity (e-neg) - ability for an atom to attract e^- in a chemical bond

↳ scale 0.0 - 4.0
↑ Fluorine
difference in e-neg b/w elements indicates how e^- are shared in bonds



electronegativity (e-neg) - ability for an atom to attract e^- in a chemical bond

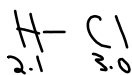
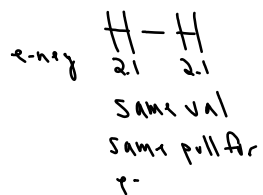
↳ scale 0.0 - 4.0
↑ Fluorine
difference in e-neg b/w elements indicates how e^- are shared in bonds



Ch 5 Notes D AF.ink

electronegativity (e-neg) - ability for an atom to attract e^- in a chemical bond

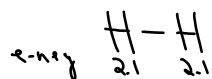
↳ scale 0.0 - 4.0
↑ Fluorine
difference in e-neg b/w elements indicates how e^- are shared in bonds



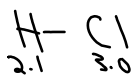
Ch 5 Notes D AF.ink

electronegativity (e-neg) - ability for an atom to attract e^- in a chemical bond

↳ scale 0.0 - 4.0
↑ Fluorine
difference in e-neg b/w elements indicates how e^- are shared in bonds



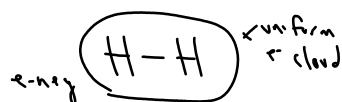
same val
same pull for
 e^- seven of e^-



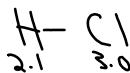
Ch 5 Notes D AF.ink

electronegativity (e-neg) - ability for an atom to attract e^- in a chemical bond

↳ scale 0.0 - 4.0
↑ Fluorine
difference in e-neg b/w elements indicates how e^- are shared in bonds



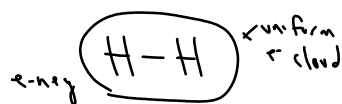
same val
same pull for
 e^- seven of $4e^-$



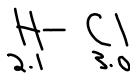
Ch 5 Notes D AF.ink

electronegativity (e-neg) - ability for an atom to attract e^- in a chemical bond

↳ scale 0.0 - 4.0
↑ Fluorine
difference in e-neg b/w elements indicates how e^- are shared in bonds



same val
same pull for
 e^- so even split

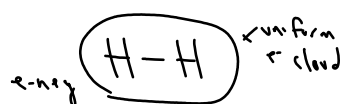


Cl's higher e-neg
means that e^- spend
more time around the Cl

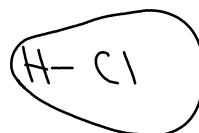
Ch 5 Notes D AF.ink

electronegativity (e-neg) - ability for an atom to attract e^- in a chemical bond

↳ scale 0.0 - 4.0
↑ Fluorine
difference in e-neg b/w elements indicates how e^- are shared in bonds



same val
same pull for
 e^- so even of e^-

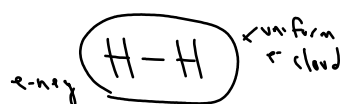


Cl's higher e-neg
means that e^- spend
more time around the Cl

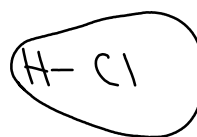
Ch 5 Notes D AF.ink

electronegativity (e-neg) - ability for an atom to attract e^- in a chemical bond

↳ scale 0.0 - 4.0
↑ Fluorine
difference in e-neg b/w elements indicates how e^- are shared in bonds



same val
same pull for
 e^- so even split



Cl's higher e-neg means that e^- spend more time around the Cl

making Cl side partially neg
& H side partially +

Ch 5 Notes D AF.ink

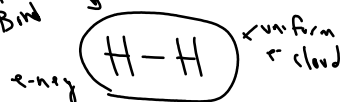
electronegativity (e-neg) - ability for an atom to attract e^- in a chemical bond

↳ scale 0.0 - 4.0

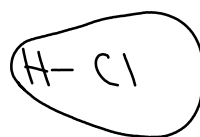
↑ Fluorine

difference in e-neg b/w elements indicate how e^- are shared in bonds

non polar
Bond



same val
same pull for
 e^- so even split



Cl's higher e-neg
means that e^- spend
more time around the Cl

Cl has more
of the e^- cloud
making Cl side partially neg
& H side partially +

POLAR BOND

Trends in e-neg

Trends in e-neg

Across per e-neg \uparrow , b/c nuclear charge \uparrow
and the atom can more strongly attract neighboring
atom's e⁻

Trends in e-neg

Across per e-neg \uparrow , b/c nuclear charge \uparrow
and the atom can more strongly attract neighbouring
atom's e⁻

Down a group e-neg \downarrow , b/c ① the atom's e⁻ cloud
can shield the nuclear charge, preventing attractions of
incoming e⁻s. ② \downarrow group move E-levels of e⁻ make the
atom larger so incoming e⁻ is further from nuclear charge so
it experiences less attraction.